Claims 1-26 and 81-89 are currently pending. Claims 1-5, 9-12, 14-18, 21, 24, 81-86, 87 are currently amended and new claims 88 and 89 are added. Based on the following remarks, the Applicants respectfully request reconsideration of the Application.

Rejection under 35 U.S.C. §103 in view of *Isfeld, Hagsand and Deri*

The Examiner rejected claims 1-6, 8-10, 12-19, 21-23, 25-26 and 81-87 under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 5,828,835 (*Isfeld*) in view of United States Patent No. 7,254,142 (*Hagsand*) and United States Patent No. 5,943,150 (*Deri*). Because the claimed embodiments of claims 1-6, 8-10, 12-19, 21-23 and 25-26 are not obvious in view of *Isfeld*, *Hagsand* and *Deri*, the Applicants respectfully requests the rejection be withdrawn.

The cited art does not disclose or suggest each element of claim 1

Among other limitations, claim 1 recites:

> **determining a route for a unidirectional channel** from a source processing node to a destination processing node within the array of processor nodes, the **determined route based on a physical description of the array of processor nodes;**
> **generating the unidirectional channel along the determined route** from the source processing node to the destination processing node, **the unidirectional channel having a bandwidth requirement;**

The Examiner correctly states that the "combination of Isfeld and Hagsand does not disclose a channel that is uni-directional from a source processing node to a destination processing node, the source processing node and destination processing node contained within the array of processor nodes, the channel generated based on a physical description of the array of processing nodes." (*Office Action*, p. 3, para. 5 and p. 4, para. 1) Isfeld and Hagsand also do not disclose or suggest "determining a route for a unidirectional channel"

Deri does not cure the deficiencies of *Isfeld* and *Hagsand* with respect to the embodiment of claim 1. *Deri* describes a system for separating and routing local and express data by interconnecting nodes with **fiber optic cables**. Traffic is carried along the fiber optic cables at light frequency, or some "color" that is different than that of local channel traffic. The channel traffic reflects off of selective mirrors placed at each local node, and local-channel-traffic light carriers pass through the selective mirrors and are not reflected. (Col 7, lines 30-42) Deri discloses references by Daly that describe an array of nodes where messages can be sent between nodes. (col. 2, line 65 to col. 3, line 10)

Deri does not disclose "**determining a route** for a unidirectional channel from a source processing node to a destination processing node within the array of processor nodes" wherein the route is "**based on a physical description** of the array of processor nodes" as recited in claim 1. Rather, *Deri* discloses carrying traffic along fiber optic cables and notes that Daly which discloses messages sent between nodes. Daly does not disclose determining a route for a channel or that a route is based on the description as recited in claim 1.

Deri should not be combined with Isfeld and Hagsand

Deri should not be combined with *Isfeld* and *Hagsand* because the references are not compatible with each other. One skilled in the art would not find it obvious to try to combine *Isfeld*, *Hagsand* and *Deri* because their communication protocols are not compatible. *Isfeld* and *Hagsand* relate to broadcast over connection-less wired channels, where a signal is transmitted from a source without having any information regarding any receivers that may or may not receive the signal. **Unlike *Isfeld* and *Hagsand*, *Deri* is related to fiber optic channels having protocol and other control messaging** sent as light waves over a fiber optic medium. One of ordinary skill in the art would know that connectionless channel broadcasting protocols and inter-node fiber optic channel communication protocols **will not work together**. In fact, <u>*Isfeld* even differentiates between nodes connected by high speed connections and connectionless protocols,</u> indicating that connectionless protocol systems

do not have the amount of control messages as distributed processing nodes connected by high speed means. (*Isfeld*, col. 2, lines 4-6) Thus, it would not be obvious to try to combine the system of *Isfeld* with the systems of *Hagsand* and *Deri* because those skilled in the art would understand that the protocols disclosed in the different references would not work together. Rather, it would be obvious to one of ordinary skill in the art the protocol of Deri would not work with *Isfeld* and *Hagsand*.

The Examiner's rebuttal to this argument is that "a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention." (*Office Action*, p. 12, para. 30) The Applicants respectfully submit that the Examiner's rebuttal does not address the fact that the suggested combination will not work together.

Because *Isfeld*, *Hagsand*, and *Deri* do not disclose or make obvious the elements of claim 1, both in combination and considered individually, claim 1 should be allowed. Claims 2-6, 8-10, 13, and 81-84 depend from claim 1 and incorporate the elements of claim 1 in addition to the patentably distinguishing limitations they recite. Therefore, claims 2-6, 8-10, 13, 81-84 and are not obvious over the cited references for at least the same reasons as claim 1 and should also be allowed.

Claim 14 contains elements that distinguish the claimed embodiment from *Isfeld* and *Hagsand*, and *Deri* similarly and in addition to those recited in claim 1. Therefore, claim 14 should be allowed for at least the same reasons as claim 1. Claims 15-19, 21-23, 25-26, and 85-87 depend from claim 14 and incorporate the elements of claim 14 in addition to the patentably distinguishing limitations they recite. Therefore, claims 15-19, 21-23, 25-26, and 85-87 are not obvious over the cited reference for at least the same reasons as claim 14 and should also be allowed.

Claims 4 and 17

In addition to being dependent on allowable claim 1, claim 4 is further allowable because *Hagsand* does not teach or suggest "the unidirectional channel has a maximum number of buffers and size of buffers," as recited in amended claim 4. *Hagsand* mentions increasing bandwidth allocation in that "it may be necessary to increase the bandwidth allocation to the parameter (b) . . ." (Col. 4, lines 20-21) However, the "parameter (b)" discussed in *Hagsand* is the allocated bandwidth parameter, not the number of buffers (See FIG. 2, legend). Thus, *Hagsand* does not teach increasing the number of buffers. For at least the above reasons, amended claim 4 is allowable.

In addition to being dependent on allowable claim 14, amended claim 17 also recites "the unidirectional channel has a maximum number of buffers," and should be allowable for at least the same reasons as amended claim 4.

Claims 5 and 18

In addition to being dependent on allowable claim 1, claim 5 is further allowable because *Hagsand* does not teach "reserving intermediate resources for the unidirectional channel based on the bandwidth requirements," as recited in claim 5. *Hagsand* describes increasing bandwidth allocation to the measured bandwidth parameter (B), rather than reserving intermediate resources. "[T]he bandwidth allocation to the bandwidth parameter (b) is adjusted [increased] to the measured bandwidth parameter (B) while being less than the maximum allowable value that is represented by the parameter (p)." (*Hagsand*, Col. 4, Lines 63-67) For example,

> If the total value of the bandwidth requirement (B) plus 50 the offset parameter (Of) and half the value of the delta parameter (De) is **greater** than the maximum value (P) then the unit 110 sends a yes-signal 112 to a setting unit 114. The unit 114 **increases the value of the bandwidth parameter (b)** so that the bandwidth parameter (b) is set to equal the value of the peak chanspec bandwidth parameter (P).

> If the total value of the bandwidth parameter (B) plus the offset parameter (Of) and the half the delta parameter (De) is

> **not greater** than the peak parameter (P) then the unit 110 sends a no-signal 116 to a set unit 118. The unit 118 **increases the value of the bandwidth parameter (b)** so that the parameter (b) equals the total value of the bandwidth parameter (B) plus the offset parameter (Of) and half the value of the delta parameter (De). (*Hagsand*, Col. 4, lines 49-63)(Emphasis added)

Either way, *Hagsand* **increases** the bandwidth allocation to the bandwidth parameter (b). Thus, intermediate resources are not reserved based on the bandwidth requirements. Rather, the bandwidth allocation is increased based on the bandwidth parameter (p). For at least the above reasons, claim 5 is allowable.

In addition to being dependent on allowable claim 14, claim 18 also recites "the source processing node and the destination processing node are configured to reserve intermediate resources for the unidirectional channel based on the bandwidth requirements," and should be allowable for at least the same reasons as claim 5.

Claims 6 and 19

In addition to being dependent on allowable claim 1, claim 6 is further allowable because *Hagsand* does not teach "guaranteeing bandwidth based on the bandwidth requirements using time division multiplexing," as recited in claim 6. *Hagsand* states that "it is **almost guaranteed** that the data will reach the receivers at the rate given by the capacity of the channel increasing bandwidth allocation." (*Hagsand*, Col. 2, Lines 37-38) (Emphasis added). "Almost guaranteed" is not the same as guaranteed. For at least the above reasons, claim 6 is allowable.

In addition to being dependent on allowable claim 14, claim 19 also recites "the source processing node is configured to guarantee bandwidth based on the bandwidth requirements using time division multiplexing," and should be allowable for at least the same reasons as claim 6.

Claims 8 and 21

In addition to being dependent on allowable claim 1, claim 8 is further allowable because *Isfeld* does not teach "polling a plurality of channels to check if data is received into the receive buffer for the unidirectional channel," as recited in claim 8. *Isfeld* describes storing status information. However, storing status information is not the same as checking if the channel has received data. Moreover, *Isfeld* does not disclose what kind of status information is stored, if the status information would indicate that data is received into a receive buffer for a channel, or that the stored status information is polled or that it is checked. *Isfeld* does not disclose any use for the stored status information. For at least the above reasons, claim 8 is allowable.

In addition to being dependent on allowable claim 14, claim 21 also recites "the destination processing element is configured to poll a plurality of channels to check if data is received into the receive buffer for the unidirectional channel," and should be allowable for at least the same reasons as claim 8. For at least the above reasons, claim is allowable.

Claims 9 and 22

In addition to being dependent on allowable claim 1, claim 9 is further allowable because *Isfeld* does not teach "freeing the transmit buffer using the source processing element," as recited in amended claim 9. *Isfeld* discloses that "the IOS driver frees up the transmit buffers." (*Isfeld*, Col. 34, Line53) The IOS is a semi intelligent I/O module. For example, *Isfeld* states that "FIG. 3 provides a block diagram of a semi-intelligent I/0 module (IOS) such as used in the system of FIG. 1." (*Isfeld*, Col. 5, Lines 3-4). Thus, the IOS is not a "source processing element" as recited amended claim 9. For at least the above reasons, amended claim 9 is allowable.

In addition to being dependent on allowable claim 14, claim 22 also recites "the source processing element is configured to free the transmit buffer," and should be allowable for at least the same reasons as amended claim 9.

Claims 10 and 23

In addition to being dependent on allowable claim 1, claim 10 is further allowable because *Isfeld* does not teach "freeing the receive buffer using the destination processing element," as recited in amended claim 10. *Isfeld* discloses "maintaining a list of free receive buffers." (*Isfeld*, Col. 38, claim 11, Line 36) However, there is no disclosure in claim 11 of *Isfeld* or in any of its dependent claims that the list is maintained by a "destination processing element," as recited in amended claim 10 of the present application. Moreover, there is no disclosure in any of the dependent claims in *Isfeld* of freeing a buffer using the destination processing element. For at least the above reasons, amended claim 10 is allowable.

In addition to being dependent on allowable claim 14, claim 23 also recites "the destination processing element is configured to free the receive buffer," and should be allowable for at least the same reasons as amended claim 10.

Claims 12 and 25

In addition to being dependent on allowable claim 1, claim 12 is further allowable because *Isfeld* does not teach that "receiving the data from the receive buffer into the destination processing element is based on the pointer," as recited in amended claim 12. *Isfeld* discloses a receive data structure including receive buffers. Pointers are used for assembling the cells of data into a cohesive message in the buffer. For example, *Isfeld* discloses that "[e]ach channel allows one message to be assembled into a cohesive message in memory. The channel keeps pointers to the next place to store the cell as well as a count and status information associated with the message." (*Isfeld*, Col. 12, Lines 50-53) However, there is no disclosure that "receiving the data from the receive buffer into the destination processing element is based on the pointer," as recited in amended claim 12. For at least the above reasons, amended claim 12 is allowable.

In addition to being dependent on allowable claim 14, claim 25 also recites "the destination processing element is configured to . . . receive the data from the receive buffer

based on the pointer," and should be allowable for at least the same reasons as amended claim 12.

Claims 13 and 21

In addition to being dependent on allowable claim 1, claim 13 is further allowable because *Isfeld* does not teach that "a time for a receive call in the destination processing element does not depend upon a size of the data," as recited in claim 13. *Isfeld* describes a source processor that breaks a message into fragments and transmits the fragments across a channel. The message is then reassembled from the fragments at the receiving processor. Each fragment includes a command. The source processor creates the commands. Each command includes pointers used by the receiving processor to reassemble the message.

> The commands identify the messages to be transferred across the communication medium. In order to send a message, the commands are created by the source processor. Further, the messages may include one or more fragments of data, such as an encapsulation header and an encapsulated frame. The commands are created by the source processor in a manner such that one command is stored for each fragment of the message to be transmitted. Furthermore, the commands will include pointers to, or otherwise be associated with, memory locations in the source processor where the messages or fragments to be transferred are stored. (*Isfeld*, Col. 3, Lines 20-26)

The number of fragments depends on the size of the message. The number of commands depends on the number of fragments. The time to transmit a message depends on the number of commands. Thus, a time for a receive call in the destination processing element depends on a size of the data. For at least the above reasons, claim 13 is allowable.

In addition to being dependent on allowable claim 14, claim 26 also recites "a time for a receive call in the destination processing element does not depend upon a size of the data," and should be allowable for at least the same reasons as claim 13.

<u>Rejection under 35 U.S.C. §103 in view of *Isfeld* and *Plante*</u>

The Examiner rejected claims 7 and 20 under 35 U.S.C. §103(a) as being unpatentable over *Isfeld* in view of United States Patent Publication No. 2004/0208602 (*Plante*). Because the combination of *Isfeld* and *Plante* fails to disclose or make obvious each limitation of claims 7 and 20, the Applicants respectfully traverse this rejection.

As discussed above, *Isfeld* fails to disclose or make obvious each element of claims 1 or 14. *Plante* fails to cure the deficiencies of *Isfeld* with respect to claims 1 or 14. *Plante* discloses a free space optical communications system that resists atmospheric attenuation of optical beams. (Abstract) *Plante* does not disclose or make obvious "an array of processor nodes," "determining a route," or "generating a unidirectional channel" as recited in claims 1 and 14 on which claims 7 and 20 depend. Claims 7 and 20 which depend on claims 1 and 14, respectively, are also not disclosed or obvious in view of *Isfeld* and *Plante* and should be allowed.

<u>Rejection under 35 U.S.C. §103 in view of *Isfeld* and *Pitts*</u>

The Examiner rejected claims 11 and 24 under 35 U.S.C. §103(a) as being unpatentable over *Isfeld* in view of United States Patent No. 6,505,241 (*Pitts*). Because the combination of *Isfeld* and *Pitts* fails to disclose or make obvious each limitation of claims 11 and 24, the Applicants respectfully traverse this rejection.

As discussed above, *Isfeld* fails to disclose or make obvious each element of claims 1 or 14. *Pitts* fails to cure the deficiencies of *Isfeld* with respect to claims 1 or 14. *Pitts* discloses a network infrastructure cache that provides proxy services to a plurality of client workstations concurrently requesting access to data stored on a server. (Abstract) *Pitts* does not disclose or make obvious "an array of processor nodes," "determining a route," or "generating a unidirectional channel" as recited in claims 1 and 14 on which claims 11 and 24 depend. Claims 11 and 24 which depend on claims 1 and 14, respectively, are also not disclosed or obvious in view of *Isfeld* and *Pitts* and should be allowed.

<u>New Claims</u>

The Applicants have added new claims 88-89 which are not disclosed or obvious in view of the cited art. No new matter is added by the new claims. The Applicants respectfully submit that new claims 88-89 be allowed.

<center>Conclusion</center>

Based on the foregoing remarks, The Applicants believe the objections to the claims and the rejections to the claims have been overcome, and that the pending and new claims in the present Application are in condition for allowance. If the Examiner has any questions regarding the case, the Examiner is invited to contact the Applicants' undersigned representative.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-0600 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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